

Notice of Allowability

Application No.

10/668,926

Examiner

Baoquoc N. To

Applicant(s)

HOLM ET AL.

Art Unit

2162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 09/14/2005.
2. ☒ The allowed claim(s) is/are 12,13,15,39,40,42,53,54 and 56-73.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 07/01/2005
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 09/16/2005
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

JEAN M. CORRIELUS
PRIMARY EXAMINER

DETAILED ACTION

1. Claims 12, 39, 53, 59, 68 are amended and claims 74-75 are newly added.
Claims 12-13, 15, 39-40, 42, 53-54 and 56-75 are pending in this application.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Josephine E. Chang Reg. No. 46,083 on 09/14/2005 and 09/17/2005.

The application has been amended as follows:

12. (Currently amended) [[An audio fingerprinting method]] A computer-implemented method for audio fingerprinting comprising:
- receiving an audio signal associated with an audio piece;
 - obtaining a plurality of frequency measurements of the audio signal;
 - building an NxM matrix A based on the frequency measurements;
 - performing a singular value decomposition on the matrix A for generating an audio fingerprint, wherein $A = USV^T$, and wherein U is an NxM orthogonal matrix, S is an MxM diagonal matrix, and V^T is a transpose of an MxM orthogonal matrix;
 - retrieving one or more rows of matrix V^T ; and
 - storing the retrieved rows of matrix V^T in a data store in association with the audio piece as the audio fingerprint for the audio piece, wherein a request including the retrieved rows of matrix V^T is received by an application program and information stored in a database for the audio piece identified and retrieved based on the rows of matrix V^T in the request.

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39. (Currently amended) [[An audio fingerprinting system]] A computer-implemented system for audio fingerprinting comprising:

- an audio file reader reading an audio file storing an audio piece;
- a processor coupled to the audio file reader, the processor being configured to:
 - obtain a plurality of frequency measurements of audio signals associated with the audio piece;
 - build an NxM matrix A based on the frequency measurements;
 - perform a singular value decomposition on the matrix A for generating an audio fingerprint, wherein $A = USV^T$, and wherein U is an NxM orthogonal matrix, S is an MxM diagonal matrix, and V^T is a transpose of an MxM orthogonal matrix; and
 - retrieve one or more rows of matrix V^T ;
 - a data store coupled to the processor storing the retrieved rows of matrix V^T in association with the audio piece as the audio fingerprint for the audio piece; and
 - a database storing information for a plurality of audio pieces, wherein a request including the retrieved rows of matrix V^T is received by an application program and information for the audio piece stored in the database identified and retrieved based on the rows of matrix V^T in the request.

53. (Currently amended) An article of manufacture comprising a computer readable medium having computer usable program code containing executable instructions that, when executed, cause a computer to perform the steps of:

- obtaining a plurality of frequency measurements of an audio signal associated with an audio piece;
- building an NxM matrix A based on the frequency measurements;
- performing a singular value decomposition on the matrix A for generating an audio fingerprint, wherein $A = USV^T$, and wherein U is an NxM orthogonal matrix, S is an MxM diagonal matrix, and V^T is a transpose of an MxM orthogonal matrix;
- retrieving one or more rows of matrix V^T ; and
- storing the retrieved rows of matrix V^T in a data store in association with the audio piece as the audio fingerprint for the audio piece, wherein a request including the

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retrieved rows of matrix V^T is received by an application program and information stored in a database for the audio piece identified and retrieved based on the rows of matrix V^T in the request.

Please cancel claim 74.

Please cancel claim 75.

Allowable Subject Matter

3. Claims 12-13, 15, 39-40, 42, 53-54 and 56-73 are allowed over prior art made of record.

As to claim 12, none of the prior art alone or in combination either teach or suggest “building an $N \times M$ matrix A based on the frequency measurements; performing a singular value decomposition on the matrix A for generating an audio fingerprint, wherein $A = USV^T$, and wherein U is an $N \times M$ orthogonal matrix, S is an $M \times M$ diagonal matrix, and V^T is a transpose of an $M \times M$ orthogonal matrix; retrieving one or more rows of matrix V^T ; and storing the retrieved rows of matrix V^T in a data store in association with the audio piece as to the audio fingerprint for the audio piece, wherein a request including the retrieved rows of matrix V^T is received by an application program and information stored in a database for the audio piece identified and retrieved based on the rows of matrix V^T in the request” in conjunction with “receiving an audio signal associated with an audio piece; obtaining a plurality of frequency measurements of the audio signal.”

Claims 13, 15 and 56-64 are depended on claim 12; therefore, they are allowed under the same reason as to claim 12.

Claim 39 is the computer implemented for audio fingerprinting to perform the method recited in claim 12; therefore, it is allowed under the same reason as to claim 12.

Claims 40, 42 and 65-73 are depended on claim 39; therefore, they are allowed under the same reason as to claim 39.

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Claim 53 is the article of manufacture when executed to perform the method recited in claim 12; therefore, it is allowed under the same reason as to claim 12.

Claim 54 is depended on claim 53; therefore, it is allowed under the same reason as to claim 53.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Patent Number:

Bellegarda et al. (US. Patent No. 6,697,779 B1) Patent date: 02/24/2004.

Kinsella (US. Patent No. 6,148,094) Patent date: 11/14/2000.

NPL:

Schonberg et al. Fingerprinting and forensic analysis of multimedia, Proceeding of the 12th annual ACM international conference on Multimedia, 2004, page 788-795.

Reddo S. On a spatial smoothing technique for multiple source location, page 1987, page 709.

Contact Information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Baoquoc N. To whose telephone number is at 571-272-4041 or via e-mail BaoquocN.To@uspto.gov. The examiner can normally be reached on Monday-Friday: 8:00 AM – 4:30 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached at 571-272-4107.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

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Commissioner of Patents and Trademarks
Washington, D.C. 20231.


The fax numbers for the organization where this application or proceeding is
assigned are as follow:

(571) -273-8300

[Official Communication]

BQ To

Sept 16, 2005



JEAN M. CORRIELUS
PRIMARY EXAMINER